

# The canonical Lefschetz pencils of Horikawa surfaces

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The Horikawa surfaces are explicit examples of complex surfaces of general type which are homeomorphic and have the same Seiberg-Witten invariants, but are not deformation equivalent. It is conjectured that they are not diffeomorphic; here we address the (weaker) conjecture that, equipped with their canonical Kahler forms, they are not symplectomorphic. One approach which is a priori promising is to study the Lefschetz pencils obtained from their canonical linear systems. We will discuss partial results on these examples which improve our understanding of their symplectic topology, albeit not enough to give an answer to the conjecture.